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Article

# The Dilemmas of Citizen Inclusion in Urban Planning and Governance to Enable a 1.5 °C Climate Change Scenario

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## Abstract

Cities around the world are facilitating ambitious and inclusive action on climate change by adopting participatory and collaborative planning approaches. However, given the major political, spatial, and scalar interdependencies involved, the extent to which these planning tools equip cities to realise 1.5 °C climate change scenarios is unclear. This article draws upon emerging knowledge in the fields of urban planning and urban climate governance to explore complementary insights into how cities can pursue ambitious and inclusive climate action to realise 1.5 °C climate change scenarios. We observe that urban planning scholarship is often under-appreciated in urban climate governance research, while conversely, promising urban planning tools and approaches can be limited by the contested realities of urban climate governance. By thematically reviewing diverse examples of urban climate action across the globe, we identify three key categories of planning dilemmas: institutional heterogeneity, scalar mismatch, and equity and justice concerns. We argue that lessons from urban planning and urban climate governance scholarship should be integrated to better understand how cities can realise 1.5 °C climate change scenarios in practice.

## Keywords

climate change; collaboration; inclusion; public participation; urban climate research; urban governance; urban planning

## Issue

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## 1. Introduction

Cities are increasingly spearheading climate change action and pursuing innovative strategies both individually and collectively through transnational networks (Hughes, Chu, & Mason, 2018). While more top-down approaches may be suitable in certain circumstances, inclusive planning and governance is generally needed to concurrently realise multiple ambitious goals, including those estab-

lished under the 2015 Paris Agreement (i.e., a maximum 1.5 °C long-term temperature increase), the UN Sustainable Development Goals, and the UN Habitat New Urban Agenda. Stakeholder engagement is crucial because cities are heterogeneous, complex, and often at least quasi-democratic in nature, necessitating broad buy-in before actions can be taken (Susskind, Rumore, Hulet, & Field, 2015). As climate risks and impacts are often experienced at the local level, the inclusion of different

local actors is essential to ensuring the adequate representation of diverse voices and needs (Bulkeley & Betsill, 2005). However, planning efforts are often contentious and hampered by miscommunication, misunderstanding, low civic capacity, and unresolved competition between interests and values.

Over time, urban planning scholarship and practice have developed a wide range of tools and approaches to address long-term multi-sectoral problems. For example, ideas about ‘wicked problems’ have been highly influential in debates around the complexity of public policy and planning processes (cf. Head & Alford, 2015; Rittel & Webber, 1973). In response, different planning approaches have facilitated the inclusion of diverse stakeholders in ways that acknowledge differing interests, facilitate engagement across institutional boundaries, and support action in the face of uncertainty. Yet to what extent are these existing tools and approaches capable of dealing with the urgent challenge of achieving 1.5 °C trajectories in cities across diverse contexts?

To reflect on this question, we must take stock of the strategies that cities have in their repertoires. However, comparing planning approaches across the globe is fraught with methodological difficulties (Robinson, 2016). These may include challenges with comparing across political economic arenas (such as between the Global North and South); drawing meaningful trends from individually situated actions, strategies, and experiments; and defining key concepts like citizen engagement, participation, and inclusion across social, cultural, and spatial contexts. While recognising these methodological constraints, we pursue a qualitative synthetic review approach that uncovers and interprets emblematic examples to understand particular phenomena (cf. Grant & Booth, 2009). Our goal is not to systematically or comprehensively review the literature; instead, we pursue a synthetic reading of recent scholarship to enable a thematic analysis of key dilemmas encountered in the context of inclusive and participatory climate change planning and governance approaches in cities.

We apply a qualitative synthetic review method to explore linkages and tensions between two vast bodies of literature—urban climate governance and urban planning—and ask: how do existing planning tools equip cities to realise 1.5 °C climate change scenarios given the major political, spatial, and scalar interdependencies involved? To address this question, we first review emblematic examples of consultative approaches, co-creative participation, and planning support tools to thematically identify and analyse key institutional, scalar, and spatial priorities associated with cities taking action towards 1.5 °C trajectories (Section 2). We then situate these within the literature on urban planning and governance and explore how they differ across cities in the Global North and South (Section 3).

We argue that scholars of climate change governance stand to benefit greatly from the accumulated insights of urban planning. Conversely, urban planning

scholars and practitioners can learn from the conceptual insights offered by researchers of climate governance, especially since planning increasingly faces similar ‘wicked’ challenges such as fragmented institutional arrangements, political inertia, limited resources, and mismatching boundaries. Furthermore, by branching beyond the methodological criticisms levelled against single case studies and the instrumental orientation of most discussions on planning barriers and successes (see Adger, Arnell, & Tompkins, 2005), our analysis of planning dilemmas (cf. Jordan et al., 2011) offers a novel critical approach to cross-examining experiences from different urban contexts. Ultimately, we aim to articulate practical, policy-relevant decision-making entry points in support of more ambitious and inclusive planning processes to meet the urgent challenge of achieving 1.5 °C trajectories in cities.

## 2. Climate Change Planning: Tools and Approaches

Climate change planning has emerged as a distinct enterprise for cities and regions to formally establish and chart pathways for achieving their emissions mitigation and climate change adaptation goals. Advocacy by prominent global networks, institutional isomorphism, and shared roots in traditional planning practices have yielded some commonalities. Key players such as ICLEI—Local Governments for Sustainability, C40 Cities, and more recently, the 100 Resilient Cities network have spearheaded the dissemination of best practices. That said, cities have nonetheless exhibited entrepreneurship and experimented with different arrangements and approaches, leading to heterogeneity in responses across the globe (Anguelovski & Carmin, 2011).

Climate change planning has often, although not always, emphasised stakeholder engagement, with a focus on identifying audiences, message framings, and engagement channels (Moser, 2006). Early on, this was important because general understanding and acceptance of climate change was relatively low (Stermann, 2011). For instance, entrenched ideological differences shaped public opinion in the USA (McCright & Dunlap, 2011), while public debates in the UK pitted emissions reduction targets and economic priorities as zero-sum trade-offs (Lorenzoni, Nicholson-Cole, & Whitmarsh, 2007). This revealed a need to improve levels of awareness and relate climate change to personal experiences and knowledge (Lorenzoni & Pidgeon, 2006). Planning efforts subsequently emphasised persistent risks posed by climate change and appealed to the societal values of ecological integrity and well-being (van der Linden, Maibach, & Leiserowitz, 2015). Public engagement, in this context, aimed to facilitate behavioural, organisational, political, and other types of social change consistent with identified mitigation and adaptation goals (Moser, 2014). While these engagement objectives persist, an increasing recognition of the importance of non-state actors—including NGOs, businesses, and academics—and of the multiple agen-

cies with a stake in climate action has precipitated the development of more complex engagement strategies that bridge institutions and foster wider consensus.

In this section, we apply the qualitative synthetic review method to highlight three broad categories of participatory and inclusive climate change planning in cities, including consultative science-policy dialogues, co-creative participatory learning systems, and the use of support tools such as joint fact-finding, scenario planning, and 'serious games'. We note that these three categories are not mutually exclusive—efforts often draw upon or extend across two, or even all three. Nonetheless, we highlight several emblematic examples and illustrate how their selective implementation can help urban actors shape priorities collectively in ways that facilitate political acceptance, buy-in, and leadership. However, we also note that questions remain around whether such approaches genuinely equip cities to realise 1.5 °C climate change scenarios.

### *2.1. Consultative Approaches*

Climate change planning often involves enabling strategic partnerships, representative networks, alliances, expert committees, and citizen coalitions. These forums bring together public demands with government agencies, non-profit associations, and private entities (Agranoﬀ & McGuire, 2004). Many of these partnerships are ad hoc, such as in the case of adaptation planning in the Bergpolder Zuid neighbourhood of Rotterdam in the Netherlands, where local stakeholders came together to synthesise climate projections, bridge sectoral interests, and uncover suitable actions (Groot, Bosch, Buijs, Jacobs, & Moors, 2015). Similarly, the Cambridge Climate Emergency Congress in Massachusetts, USA, brought together a cross-section of citizens and officials for a series of meetings to devise recommendations (Edelenbos, van Meerkerk, & Schenk, 2018). Ad hoc participatory processes such as these reflect particular strategic needs and are goal oriented.

Some consultative forums have also been institutionalised into decision-making. A good example of this is the New York City Panel on Climate Change (NPCC2), which was established in 2013 to assess future temperature, precipitation, sea level change, and coastal flood risks. Reports were drafted by scientists, decision-makers, and other stakeholders, working through thematic working groups that met throughout the planning process (Rosenzweig & Solecki, 2015). Not only were these deliverables further integrated into public policies, many of the relationships established through the NPCC2 have subsequently been drawn upon for other planning purposes—including in the case of New York's recent 1.5 °C Report (City of New York, 2017). Similar examples include the London Climate Change Partnership, Toronto Climate Change Network, Southeast Florida Regional Climate Change Compact, San Diego Regional Climate Collaborative, and, in the Global South, the Quito Panel on Climate

Change in Ecuador and Surat Climate Change Trust in India. These consultative approaches focus on formalising cross-sector collaborations and help to improve learning and capacity development within and across city boundaries (Chu, Anguelovski, & Carmin, 2016)

A significant challenge with many consultative approaches is that they assume adequate representation and that all participants have an equal say. Another is that the links between consultation and decision-making are often tenuous. Furthermore, planning is susceptible to elite capture, including disproportionate influence from private actors who may have divergent interests from other stakeholders. As a result, the convening of consultative panels does not inherently guarantee inclusive outcomes, social empowerment, or the expression of democratic citizenship (Burton & Mustelin, 2013; Cooke & Kothari, 2001; Few, Brown, & Tompkins, 2007). For example, in many cities in the Global South that receive external capacity and finance for climate change actions, participation is often an item on a donor checklist rather than a genuine learning process that builds local capacity (Carmin, Dodman, & Chu, 2013; Ensor & Harvey, 2015).

### *2.2. Deliberative and Collaborative Approaches*

Many constraints to climate change action are not scientific in nature but rather are political and policy challenges (Mearns, 2010; Moser & Ekstrom, 2010). These challenges are rooted in divergent interests, priorities, and values. Issue framing, risk assessment, and the evaluation of options are all value-laden and influenced by participants' interests, which makes the engagement of the diverse range of stakeholders critical (Folke, Hahn, Olsson, & Norberg, 2005; Preston, Rickards, Fünfgeld, & Keenan, 2015). In this section, we highlight the role of deliberative and collaborative processes to address uncertain risks and vulnerabilities.

There is a rich history of collaborative planning in the public sector (see, for example, Innes & Booher, 2010). Well-organised collaborative processes bring together stakeholders to collectively define the problem, evaluate information, and identify creative solutions that are fair, efficient, stable, and wise (Susskind & Cruikshank, 1987). They can bridge institutions and integrate voices from diverse communities, including those that are marginalised. Collaborative efforts can take different shapes and forms. Consensus building approaches focus on the formal convening of representatives in face-to-face meetings (Susskind, McKernan, & Thomas-Larmer, 1999). Neutral facilitators provide process support and help parties maximise their deliberative potential. Other approaches to collaborative planning are similar in that they emphasise broad engagement, rich deliberation, and the pursuit of collaboratively rational outcomes.

Deliberative approaches focus on building understanding and ultimately achieving consensus among heterogeneous groups. Quick & Feldman (2014) empha-

size the productive work that can and should occur across boundaries, highlighting their value as junctures for translating across, aligning among, and decentring differences. Theoretically, productive boundary work involves the pursuit of an inter-subjective, collaborative rationality arrived at through deliberation (Habermas, 1991; Innes & Booher, 2010). Collaborative rationality is contingent on having the diversity of interests represented; a degree of interdependence among them to motivate genuine engagement; and a deliberative space in which the parties are empowered to speak, interrogate, and access relevant information (Innes & Booher, 2010). When these conditions are met, participants may find creative ways to concurrently meet their needs and build stronger relationships.

Specific to climate change, collaborative boundary work can facilitate inter-institutional arrangements for sharing information, reassembling capacities and resources, and articulating and addressing distinct needs and actions. Deliberative approaches can play a role in designing, implementing, and monitoring climate change interventions (Chu et al., 2016). In many cities across the Global South, community-based planning is an important approach that simultaneously addresses local climate vulnerabilities, improves livelihoods, reduces social inequities, and facilitates development (Ayers & Forsyth, 2009). While communities have intimate knowledge of local environmental changes, they are often less aware of the wider causes and effects of climate change. Hence, community-based initiatives use co-learning approaches in which local and external scientific knowledge about climate change complement each other (Nay, Abkowitz, Chu, Gallagher, & Wright, 2014; Reid & Huq, 2014). For instance, in Indore, India, a city vulnerable to water scarcity during droughts, the municipality—through a ‘shared learning dialogue’ exercise—has proactively engaged local women’s groups and slum-dwellers associations to promote awareness and envision alternative ways of water management (Chu, 2017). In Bergrivier Municipality, South Africa, community-based interventions spearheaded by unemployed urban youth brought renewed awareness of the connections between ecology, social networks, and economic opportunities (Ziervogel, Cowen, & Ziniades, 2016). Such examples show that promoting climate resilience through knowledge cogeneration can engage stakeholders in a proactive problem-solving process to enhance social capital.

In the Global North, co-learning forums are often referred to as collaboratives or collaborative processes. Multi-stakeholder planning approaches enable processes of analysing and framing the situation, collecting information, and identifying and evaluating possible solutions in the pursuit of those that are both robust and widely supported (Innes & Booher, 2010; Margerum, 2011). While tailored to local needs, collaboratives tend to include assessments of stakeholder interests, face-to-face ‘active inquiry’ sessions, the pursuit of consensus-based pathways, and a reliance on professional neu-

tral parties to provide process support (Forester, 1999). There is substantial evidence demonstrating how collaborative processes can lead to better outcomes and enhance the adaptive capacities of cities when the conditions are right (Hobson & Niemeyer, 2011). For example, experiences with coastal communities in the Northeastern, USA, suggest that collaborative approaches can help groups engage in smarter and more effective deliberation around climate change (Susskind et al., 2015).

Collaborative approaches often involve community-level efforts to address differential capabilities, so grassroots discourse and deliberation play central roles in defining impacts and prioritising responses (Schlosberg, 2012). Peer-to-peer or citizen-led techniques can facilitate novel partnerships that focus on locally appropriate solutions. However, public deliberation in a decentralised political sphere can be messy and driven by dynamic and contentious streams of knowledge (Cheema & Rondinelli, 2007). The production of community knowledge can be an arduous and time-consuming process, especially when it involves significant complexity and uncertainty. As a result, some citizen-initiated processes fail to achieve their goals. For example, the Cambridge Climate Emergency Congress (see Section 2.1) struggled to balance its advocacy and governance roles, concurrently maintaining legitimacy in the eyes of public authorities, reflecting a diverse range of interests, and bringing about concrete climate change action (Edelenbos et al., 2018). These challenges notwithstanding, community-generated knowledge can ultimately increase the legitimacy of decisions, redress socioeconomic inequalities, and improve the likelihood of achieving locally appropriate outcomes (Ensor & Berger, 2009; Forsyth, 2013).

### 2.3. Planning Support Tools

In this section, we discuss three support tools that can be employed in climate change planning: policy experiments, joint fact-finding, and role-play simulation (RPS) exercises. These three are representative of a wider range of tools that planners might employ in practice and are illustrative of how such tools are typically embedded within deliberative, collaborative, or consultative processes. By employing these tools, policy-makers and other stakeholders are partners in the planning process, collectively analysing and interpreting knowledge and its implications for potential interventions. Such processes can address knowledge deficits by focussing on joint knowledge production, building trust in science, clarifying uncertainties, bridging values, and facilitating co-learning (Karl, Susskind, & Wallace, 2007; Nay et al., 2014).

Many cities have designed experiments in climate change planning to bridge local knowledge deficits (Bulkeley, Castán Broto, & Edwards, 2015; Chu, 2016b). Experiments involve short-term, relatively low cost initiatives to test innovative approaches before they are adopted more widely (Bulkeley & Castán Broto, 2013). In-



creasingly applied to low-carbon transition policies, for example, experiments promote overall decision-making effectiveness and help to generate new governance capacities. Methodologically, experiments can support evidence-based policy-making by supplying robust evaluations and opportunities to redesign existing approaches (Stoker & John, 2009). Experiments can therefore be seen as ‘laboratories’ of learning and sharing best practices (Karvonen & van Heur, 2014), which allow diverse actors to embed emerging needs and priorities into urban plans (Evans, 2011). In practice, experiments allow stakeholders to implement pilot projects, reframe objectives, and monitor and evaluate outcomes (Cárdenas, 2009). For example, communities in London were able to incorporate their own needs and interests into different low-carbon energy infrastructure projects (Bulkeley, Castán Broto, & Maassen, 2014). Low-income communities in Indore, India, were also able to use experiments to test implementation pathways, prioritise climate actions, and evaluate overall project benefits (Chu, 2016b). Although some have challenged their external validity and replicability, experiments have been shown to be a good approach for encouraging intensive dialogue and small-scale innovation (Stoker & John, 2009).

RPS allow for a different type of experimentation by providing safe and inexpensive sandbox-like simulated environments for exploring climate change scenarios and potential responses (Schenk & Susskind, 2014). RPS exercises are a form of ‘serious game’, within which stakeholders are asked to take on particular roles and solve fictional challenges within clear parameters (Rumore, Schenk, & Susskind, 2016). Such exercises played a prominent role in the New England Climate Adaptation Project, which involved four coastal communities in the Northeastern USA. By providing a lens through which they could assess their own situations, RPS exercises helped communities identify future risks and build support for collaborative efforts to manage them (Susskind et al., 2015). In another example, the Institutionalizing Uncertainty project engaged stakeholders in Singapore, Rotterdam, and Boston to consider how they might integrate uncertain risks into their infrastructure planning (Schenk, 2018). Serious games come in a wide range of styles and levels of complexity and are being used in a wide variety of situations around the world. For example, the Red Cross/Red Crescent Climate Centre is using games to convey complex climate science in simple and powerful formats to audiences ranging from delegates at international climate conventions to farmers in rural villages (Mendler de Suarez et al., 2012).

Joint fact-finding is another process used to engage stakeholders, with the aim of arriving at shared sets of acceptable data for planning purposes. Joint fact-finding is used in the context of climate change to help stakeholders make sense of the risks (and opportunities) posed, as well as to seek consensus around how to respond (Ehrmann & Stinson, 1999; Schenk & Matsuura, 2017). In Boston, for example, the development of the city’s

Climate Action Plan involved a series of facilitated workshops that employed joint fact-finding to help stakeholders come to a shared understanding of the sources of greenhouse gas emissions, as well as to devise shared goals and evaluate options for meeting those goals (Raab, 2017). When groups recognise the dynamic and persistently uncertain nature of the ‘facts’ in complex situations, joint fact-finding can help to devise ‘facts for now’ and ‘facts for use’ (Schenk, 2017).

To summarise, our synthetic review suggests that the emergence of various methodologies to promote dialogue and knowledge co-production between policy-makers and citizens can transform climate change planning in cities. Ultimately, however, the degree to which experiments, serious games, and other tools and approaches like joint fact-finding will be successful—especially in the context of enabling a 1.5 °C climate change scenario—often depends on the institutions and actors involved, contents of dominant discourses, presence of rules, and availability of resources. As a result, such tools require careful design and execution to harness their potential.

### 3. Dilemmas in Inclusive Climate Planning

Significant action is required to enable 1.5 °C climate change scenarios, and many have noted the importance of truly transformative approaches to decarbonisation that involve interconnected technical, economic, social, and political changes (Patterson et al., 2018; Pelling, O’Brien, & Matyas, 2015). Though cities can play a unique role in facilitating deep societal change (Bernstein & Hoffmann, 2018), climate transformations will place unprecedented demands on them. In light of this, urban planning scholarship and practice can offer insights into how planners and policy-makers can engage with local constituents to facilitate behaviour change, alter local economic production systems, engender local awareness, and offer alternative visions of development.

We previously illustrated different inclusive planning approaches that have emerged to enable urban climate change action. The synthetic review highlighted efforts to explore interests and account for disparate priorities, seek consensus, understand complex data, and facilitate strategic outcomes. A series of priorities for advancing inclusive approaches are summarised in Table 1. Despite the advances made, our thematic analysis in this section illustrates that the ambitious potential of such approaches are often constrained by factors such as fragmented governance arrangements, political inertia, limited resources, and mismatching jurisdictional boundaries. Drawing on terminology used by Jordan et al. (2011), these issues can be seen as reflecting various key dilemmas—institutional, scalar, and spatial—that cities face while pursuing climate actions. In this light, questions arise about the extent to which existing inclusive planning approaches can genuinely equip cities to realise 1.5 °C climate change scenarios.

**Table 1.** Key dilemmas faced by cities in advancing ambitious and inclusive climate action.

Category	Procedural aspects	Structural aspects
<b>Institutional</b>	<ul style="list-style-type: none"> <li>• Gaining issue recognition from powerful local departments.</li> <li>• Bringing stakeholders with diverse values and interests.</li> <li>• Facilitating decentralised decision-making and the separation of duties.</li> <li>• Addressing capacity and resource constraints.</li> </ul>	<ul style="list-style-type: none"> <li>• Overcoming the rhetoric of ‘environment versus development’.</li> <li>• Confronting powerful investment and speculative behaviours in development.</li> <li>• Bridging elite political interests, entrenched ideological, and value differences.</li> <li>• Breaking the ‘siloed’ nature of urban planning.</li> </ul>
<b>Spatial/Scalar</b>	<ul style="list-style-type: none"> <li>• Determining how responsibilities are divided across different levels of government.</li> <li>• Addressing spatial and political fragmentation within and across cities.</li> <li>• Planning across ecosystem, landscape, and cross-jurisdictional scales.</li> </ul>	<ul style="list-style-type: none"> <li>• Addressing the multi-scalar and multi-level nature of climate change priorities.</li> <li>• Overcoming conflicting social and political interests across jurisdictions.</li> <li>• Designing adequate plans when public sector functions are constantly eroded.</li> </ul>
<b>Equity/Justice</b>	<ul style="list-style-type: none"> <li>• Facilitating adequate representation and inclusion of diverse stakeholders.</li> <li>• Ensuring that planning outcomes are equitably distributed.</li> <li>• Recognising the needs and interests of marginalised and vulnerable communities.</li> </ul>	<ul style="list-style-type: none"> <li>• Confronting elite or entrenched political and economic interests.</li> <li>• Reframing climate change action as a collective and socio-ecological priority.</li> <li>• More equitably redistributing the procedures, responsibilities, and beneficiaries of planning.</li> </ul>

### 3.1. Institutional Dilemmas

Cities experience substantial uncertainty that affects their ability to identify the most appropriate mitigation and adaptation actions. External uncertainties are compounded by entrenched urban political dynamics, funding pressures, and economic interests that constrain the structure of planning processes. Institutional heterogeneities and disparities—which manifest as diverging sectoral interests, uneven governance capacities, and conflicting policy mandates—shape the ad hoc and context-dependent nature of urban climate change planning.

Scholars have long noted that discussions of the reflexive turn in urban planning must include analyses of power, the state, and political economy (Healey, 1996). These power differentials are particularly visible when science is driving public policy debates because science itself is so often contested and value-laden (Layzer, 2011). Although the literature suggests that collaborative processes can help address uncertainty, many public discourses have been subsumed by powerful actors that hold their own vested interests. For example, a study of several Australian cities highlighted the disproportionate role private property developers played in driving local climate change agendas (Taylor, Wallington, Heyenga, & Harman, 2014). Although cities like Durban, South Africa, and Toronto, Canada, are considered early leaders of climate action, they also face push-back from property speculators, unsupportive legal environments, and occasional climate denialism among their local leadership (Carmin et al., 2013). Finally, in the USA, cities in Florida, North Carolina, and elsewhere are discouraged from us-

ing the language of climate change due to ideologically driven state mandates (Shi, Chu, & Debats, 2015). Ambiguities around how to frame climate change against powerful interests have constrained the degree to which existing plans can engage and be straightforward with the broader public.

In some cities, priorities across municipal agencies are vastly divergent and often not conducive to cooperation on large multi-scalar issues like climate change. In Durban, for example, climate change priorities are spearheaded by the Environmental Planning and Climate Protection Department (EPCPD), which began seriously thinking about the issue in the early 2000s (Roberts, 2010). However, many projects have been constrained by internal conflicts, particularly when relationships were tenuous between a relatively minor department such as the EPCPD and more prominent energy, infrastructure, and economic development departments (Chu, Anguelovski, & Roberts, 2017). These challenges reflect the prioritisation of economic development over climate protection.

A final institutional dilemma relates to the human capacity deficiencies found in many cities. Uncertain climate projections and scenarios can impede the coherence of climate change messages aimed at redirecting planning priorities (Patt & Dessai, 2005; Whitmarsh, 2011). Furthermore, planning departments often face deficiencies in financing, technical skills, staffing capacity, and legal provisions, which constrain their abilities to work beyond day-to-day tasks (Carmin et al., 2013). In some cases, cities have rejected new sources of data and finance because of the anticipated additional paperwork, reporting burdens, or expertise. The main challenge,

therefore, is often not the availability of climate science, but internal limitations, scepticism, and mismatches in capacity, funding, and institutional responsibility.

### 3.2. *Spatial and Scalar Dilemmas*

Cities typically oversee infrastructure and public services, are directly accountable to local electorates, and are first-responders during hazard events. As a result, the spatial concentration of people, production, and consumption behaviours presents many opportunities for climate action (Rosenzweig, Solecki, Hammer, & Mehrotra, 2010). For example, the literature on low-carbon transitions shows that the concentration of population and infrastructure in cities can foster innovative approaches to renewable energy consumption and other grassroots mitigation technologies (Bulkeley, Castán Broto, Hodson, & Marvin, 2011). Even so, such innovations are rarely straightforward due to mismatches between jurisdictional and ecological boundaries (Bai, McAllister, Beaty, & Taylor, 2010).

Most climate actions require collaboration across jurisdictional boundaries; however, many cities are fragmented across space, with political boundaries dividing what are otherwise contiguous metropolitan regions (Bollinger et al., 2013). Governance theories note that coordinating climate change actions across diverse landscapes and populations is challenging due to geographically specific risks and impacts, which are determined by particular sociocultural contexts, political or legal jurisdictions, and ecological conditions (Adger, Barnett, Brown, Marshall, & O'Brien, 2013). For example, changing mobility behaviours by incentivising public transportation usage or transit-oriented development is critical for reducing emissions, but such actions rely on coordinating across transportation networks that transcend political boundaries (Bollinger et al., 2013). In Boston, USA, a state agency is responsible for the public transportation system while different local agencies are responsible for the road network, which weaves through more than 100 separate municipalities. Moreover, the way that communities are spread across space—which involves issues of zoning and land use planning—affects travel demands, vehicle dependency, and emission levels (Dulal, Brodnig, & Onoriose, 2011). Therefore, any planning process designed to change transportation behaviours must address larger patterns of mobility and settlement across city-regions, together with individual behaviours and consumption preferences (Chapman, 2007).

The transboundary nature of infrastructure networks also influences how cities coordinate adaptation and risk management actions (Davoudi, Crawford, & Mehmood, 2009). For example, Surat, India, is vulnerable to flooding during monsoon seasons (Chu, 2016a). In the early 2010s, Surat built several large-scale infrastructures to reduce flood risks; however, this infrastructure is functional only if coordinated with the upstream dams man-

aging discharge from the larger regional watershed (Bhat, Karanth, Dashora, & Rajasekar, 2013). In another example, Medellín, Colombia, is building a 46-mile-long green belt to manage growth while also protecting urban forests, providing access to green spaces, and reducing urban heat island effects (Anguelovski et al., 2016). Such a large-scale 'green' infrastructure project requires coordination between regional transport authorities and the different municipalities in charge of housing and public services (Chu et al., 2017). These examples highlight how cities cannot tackle climate change as stand-alone stressors in specific locations (Hallegatte, 2009), but rather must do so as portfolios of systemic risks on infrastructure networks and land use patterns that stretch across boundaries.

In terms of the multi-scalar nature of climate change, scholars note that planning and management boundaries are crossed horizontally—i.e., across political boundaries—and vertically among hierarchies of government (Hooghe & Marks, 2003). For example, climate action around water issues in Dutch cities is largely the responsibility of regional water boards, but municipalities are responsible for interrelated land use planning decisions, and provincial and national agencies for higher-level water system planning and decision-making (Uittenbroek, Janssen-Jansen, & Runhaar, 2013). In another case, energy production and consumption policies in cities in the UK and Germany are contingent upon directives from national and European Union authorities, while local authorities often manage incentive programmes (Kern & Bulkeley, 2009). At a more local level, the Tokyo Metropolitan Government in Japan must coordinate climate actions across 23 wards that are functionally separate from each other (Hijioka et al., 2016).

Control over many climate change responsibilities is devolved to non-state, network, or extra-local actors. For many cities in the Global South, transnational networks provide the capacities and resources necessary for climate action. Examples include C40, ICLEI, and 100 Resilient Cities, all of which have their own agendas and interests that shape their engagements with cities (Andonova, Betsill, & Bulkeley, 2009). Private and informal sectors also play a variety of roles. For example, water and electricity systems are often privately owned or managed, and yet they are both integral to communities and intertwined with other infrastructure systems. In the case of Mumbai, India, and Lagos, Nigeria, different informal or private neighbourhood tankers help supply clean water to rapidly urbanising areas that are yet to be served by formal municipal pipelines (Gandy, 2006; Graham, Desai, & McFarlane, 2013).

The multiple scales of governance add layers of actors, networks, and institutions to any urban planning process. The interconnectedness of networks across space is compounded by the fragmentation of governance scales and jurisdictions, resulting in numerous agencies and authorities with distinct yet highly interconnected roles and responsibilities (Hughes et al., 2018). In



order to balance the scope of climate change actions, public authorities must share decision-making arenas with equally powerful and informed actors.

### 3.3. Equity and Justice Dilemmas

As we noted in Section 2.2, deliberative planning processes can enable broad knowledge sharing, leading to collaboratively rational actions (Habermas, 1991; Healey, 1996). However, the combination of high levels of public indecisiveness, apathy, uncertainty over sources of scientific data, and the intransigence of many urban interests can also result in significant disagreement. Intractability and the absence of many voices—together with opportunities for elite capture—can exacerbate inequity and injustice. Here we examine how cities must contend with entrenched power differentials that affect the ambition and inclusiveness of planning outcomes.

Procedural inclusiveness requires the explicit engagement of traditionally marginalised communities in the policy process. For example, in the late 2000s, Quito, Ecuador, established a citizen's climate change panel with representation from youth groups, indigenous communities, and local women's associations, which helped to prioritise actions that balanced climate and development needs (Anguelovski, Chu, & Carmin, 2014). Similarly, cities that participated in the Rockefeller Foundation's Asian Cities Climate Change Resilience Network (ACCCRN) embarked on a series of 'shared learning dialogue' workshops that brought together diverse stakeholders to design appropriate actions (Kernaghan & da Silva, 2014). Such programmes have been prevalent in the USA as well, where New York City (Rosenzweig & Solecki, 2010), Chicago (Coffee, Parzen, Wagstaff, & Lewis, 2010), and San Francisco (Ekstrom & Moser, 2014) have all advocated for broadly representative approaches. The objectives of these programmes were to improve citizen awareness, develop civic capacity and knowledge, and legitimise prospective planning decisions.

Although inclusive processes are critical, they must be accompanied by a recognition that facilitating equitable outcomes is equally important (Meerow & Newell, 2016; Shi et al., 2016). Some scholarship suggests that targeted political mobilisation from elites and advocacy groups can be more influential than broad participatory processes (Brulle, Carmichael, & Jenkins, 2012). The issue of who has power over the process is critical because it affects how priorities enter the public consciousness. For example, though scientific and technical experts from abroad helped to design inclusive forms of climate adaptation in Santiago, Chile, the planning process played out against complex and intersecting urban political interests (Krellenberg & Katrin, 2014). In Jakarta, Indonesia, large engineering firms based outside the country guided much of the decision-making around climate infrastructure (Anguelovski et al., 2016). Both these examples raise questions about the interplay between external and local interests, the extent to which

local priorities and marginalised groups are addressed, and the relationship between local climate and development agendas.

The decentralisation of decision-making in cities has led to a proliferation of arenas for participation and deliberation. However, this political restructuring has uncovered more fundamental questions about who has control over climate change planning processes and outcomes. Here we highlighted corresponding procedural and distributive equity priorities, which, when combined with the other institutional and scalar dilemmas, point to complex webs of values, ideologies, and practices that characterise climate change action in cities. As Table 1 summarised, these intersecting priorities often lead to contentious questions and even uncomfortable trade-offs. A recognition of these dilemmas therefore contributes to uncovering specific decision-making parameters around evaluating and prioritising capacities and resources to realise 1.5 °C climate change scenarios in practice.

## 4. Conclusion

In this article, we synthetically reviewed literature on participatory planning and urban governance in the context of climate change, identifying key institutional, scalar, and spatial dilemmas associated with cities taking action towards 1.5 °C scenarios. A key finding is that the ability to plan for climate change in cities is contingent on being able to mobilise across spaces and scales. Inclusive tools can enable collaborative processes that acknowledge the interests of different stakeholders, facilitate engagement across boundaries, and address uncertainty. However, these tools must be structured to reach across space and scale. Questions remain around whether existing approaches to inclusive planning can actually facilitate the sorts of ambitious actions required to meet the 1.5 °C target. Planning processes often face dilemmas between procedural orientations—i.e., embedding climate change into existing practices—versus more structural orientations to transforming underlying urban political and economic functions (including addressing existing social and environmental injustices in cities). Overall, there remains significant opportunity in interrogating the overlap between planning and governance scholarship.

The findings highlight entry points for evaluating experiences in pursuing 1.5 °C scenarios across different urban contexts, as well as generating comparative insights despite the locally specific nature of many climate change plans and policies. The dilemmas identified in Table 1 offer insights on competing decision criteria and trade-offs associated with pursuing ambitious and inclusive climate action. An awareness of these dilemmas can thus enrich and inform ways of articulating, framing, conducting, and evaluating practical approaches amidst diverse citizen voices and political priorities. This approach acknowledges but also moves beyond familiar catalogues of internal limitations, scepticism, and mismatches in capacity, funding, and policy responsibility

that prevent cities from pursuing more ambitious and inclusive actions. In particular, we contribute to reflections on: (1) how to cultivate urban institutions that can enable adaptable and collaborative forms of governance that are also aligned to global climate change imperatives; (2) how to navigate spatial and scalar dilemmas through a critical awareness of the complex networks of actors and institutions; and (3) how to deal with equity and justice issues, such as through multidimensional mechanisms that include intersectional class, gender, ethnic, racial, and age-related priorities to evaluate the processes and outcomes of climate change planning.

Overall, we argue that scholars of climate change governance stand to benefit from the accumulated insights of urban planning, and conversely, urban planners and practitioners stand to benefit from the insights offered by climate governance. Drawing together insights from both perspectives is crucial for enhancing the likelihood of realising ambitious and inclusive climate action to enable 1.5 °C climate change scenarios within complex urban planning and governance settings.

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### Conflict of Interests

The authors declare no conflict of interests.

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